

Claims

What is claimed is:

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1. A method for producing stearidonic acid in a plant seed, said method comprising:

growing a plant having integrated into its genome a first DNA construct comprising, in the 5' to 3' direction of transcription, a promoter functional in a plant seed cell, a DNA sequence encoding a delta-six desaturase, and a transcription termination region functional in a plant cell, and

10 growing said plant under conditions whereby said delta-six desaturase is expressed.

2. The method according to claim 1 wherein said plant has a second construct integrated into its genome, wherein said second construct has in the 5' to 3' direction of transcription, a promoter functional in a plant seed cell, and a DNA sequence encoding a delta 12 desaturase.

3. The method according to claim 1 wherein said plant has a second construct integrated into its genome, wherein said second construct has in the 5' to 3' direction of transcription, a promoter functional in a plant seed cell, and a DNA sequence encoding a delta 15 desaturase.

20 4. The method of Claim 1 wherein said desaturase encoding sequence is from the genus *Mortierella*.

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5. The method according to Claim 1, wherein said promoter is a napin promoter.

6. The method according to Claim 1, wherein said promoter is from the soybean β -conglycinin 7S subunit transcription initiation region.

5 7. The method according to Claim 1, wherein said method further comprises extracting oil from said plant seed.

8. The method of Claim 7, wherein said oil comprises about 5 weight percent or greater stearidonic acid.

9. The method of Claim 7, wherein said oil comprises about 10 weight
10 percent or greater stearidonic acid.

10. The method of Claim 7, wherein said oil comprises about 15 weight percent or greater stearidonic acid.

11. The method of Claim 7, wherein said oil comprises about 20 weight percent or greater stearidonic acid.

15 12. The method of Claim 7, wherein said oil comprises about 25 weight percent or greater stearidonic acid.

13. A seed comprising about 5 weight percent or greater stearidonic acid as a component of total fatty acids found in the seed oil.

14. The seed according to Claim 13 comprising about 10 weight percent or greater stearidonic acid as a component of said seed oil.

15. The seed according to Claim 13 comprising about 15 weight percent or greater stearidonic acid as a component of said seed oil.

5 16. The seed according to Claim 13 comprising about 20 weight percent or greater stearidonic acid as a component of said seed oil.

17. The seed according to Claim 13 comprising about 25 weight percent or greater stearidonic acid as a component of said seed oil.

18. Seed oil obtained from seed of Claim 13.